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CLAIMS

(57) [Claim(s)]

[Claim 1] The 1st connector housing with which insertion opening which inserts a connector was formed and the hood was formed outside while two or more connection terminals were held, The 2nd connector housing with which two or more connection terminals which fitting is carried out to said 1st connector housing, and are connected to said connection terminal were held, In the simple water proof connector which consists of lock coverings equipped with the duplex stop section which is inserted in the back end section of the 2nd connector housing, and performs the omission stop of a connection terminal this — While preparing a seal projected part in the top face and side face of a front periphery of said hood The simple water proof connector characterized by said sealing surface contacting said seal projected part when a sealing surface is prepared in the top face and side face of the inner circumference front end section of said lock covering and said 1st connector housing and said 2nd connector housing fit in.

[Claim 2] In the simple water proof connector which consists of connector housing with which two or more connection terminals were held, and lock covering equipped with the duplex stop section which is inserted in the back end section of this connector housing, and performs the omission stop of a connection terminal The simple water proof connector characterized by said sealing surface contacting said seal projected part when a sealing surface is prepared in the top face and side face of the inner circumference front end section of said lock covering and said lock covering is inserted in, while preparing a seal projected part in the top face and side face of a back periphery of said connector housing.

[Claim 3] The simple water proof connector according to claim 1 by which hinge association of said lock covering is carried out at said 1st connector housing.

[Claim 4] The simple water proof connector according to claim 2 by which the slot which stops said seal projected part is prepared on said sealing surface.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the structure of the simple water proof connector which can be secured without using for the multipoint connection of the wire harness for automobiles etc., and the waterproofness in still more detailed connector mutual fitting connection minding packing etc. about a suitable simple water proof connector.

[0002]

[Description of the Prior Art] Drawing 7 shows an example of the conventional water proof connector. The male connector housing B with which the female mold connector housing A with which the connection terminal which stuck by pressure electric-wire 33a equipped with rubber stopper 35a was held, and the connection terminal which stuck by pressure electric-wire 33b equipped with rubber stopper 35b were held is the water proof connector which fits in mutually. The male housing B consists of a skirt-board cylinder part 37 which accepts the insertion cylinder part 36 of the female mold housing A, and the container liner section 38 which held the connection terminal, and the

packing 39 for waterproofing is inserted in the peripheral face of said container liner section 38.

[0003] Therefore, waterproofness when fitting connection is made at said male housing B can prevent infiltration of the moisture from the container liner section 38 side with the waterproofing packing 39 in which said female mold housing A was inserted at the peripheral face of the container liner section 38 of the male housing B. Moreover, when the peripheral face of the waterproofing packing 39 carries out a pressure welding to the inner skin of the insertion cylinder part 36, the moisture which is going to permeate from the insertion cylinder part 36 side is prevented. Furthermore, by the rubber stoppers 35a and 35b with which electric wires 33a and 33b were equipped, infiltration of the moisture transmitted in electric wires 33a and 33b is prevented, and waterproofness is secured.

[0004]

[Problem(s) to be Solved by the Invention] however, if it is in the water proof connector of the above-mentioned configuration, the waterproofing packing 39 should separate from the container liner section 38 at the time of a maintenance, or twist -- it is sufficient, and it carries out and waterproofness may be spoiled. Moreover, since the waterproofing packing 39 formed with spring materials, such as rubber, and the wearing nature of rubber stoppers 35a and 35b are not very good, its workability is bad. Furthermore, there is a problem which components mark increase and leads to a cost rise by using the waterproofing packing 39 and rubber stoppers 35a and 35b. In the water proof connector especially used for the interior-of-a-room side of the automobile where an operating environment is not severe, strict watertightness is enough, if the waterdrop which is not required but adheres to connector housing by air conditioning etc. can prevent that even a connection terminal permeates.

[0005] The purpose of this invention is to offer the simple water proof connector which can aim at reduction of the cost by reduction of components mark while waterproofness is secured without using packing etc. and it can do an attachment activity easily.

[0006]

[Means for Solving the Problem] The 1st connector housing with which, as for the above-mentioned purpose concerning this invention, insertion opening which inserts a connector while two or more connection terminals are held was formed, and the hood was formed outside. The 2nd connector housing with which two or more connection terminals which fitting is carried out to said 1st connector housing, and are connected to said connection terminal were held. In the simple water proof connector which consists of lock coverings equipped with the duplex stop section which is inserted in the back end section of the 2nd connector housing, and performs the omission stop of a connection terminal this -- While preparing a seal projected part in the top face and side face of a front periphery of said hood. When a sealing surface is prepared in the top face and side face of the inner circumference front end section of said lock covering and said 1st connector housing and said 2nd connector housing fit in, the simple water proof connector characterized by said sealing surface contacting said seal projected part can attain.

[0007] Moreover, connector housing with which, as for the above-mentioned purpose concerning this invention, two or more connection terminals were held. In the simple water proof connector which consists of lock coverings equipped with the duplex stop section which is inserted in the back end section of this connector housing, and performs the omission stop of a connection terminal. While preparing a seal projected part in the top face and side face of a back periphery of said connector housing. When a sealing surface is prepared in the top face and side face of the inner circumference front end section of said lock covering and said lock covering is inserted in, the simple water proof connector characterized by said sealing surface contacting said seal projected part can attain.

[0008]

[Function] In the simple water proof connector of this invention by the above-mentioned configuration, after holding a connection terminal in the 2nd connector housing, while the duplex stop of the connection terminal is carried out by inserting in lock covering, when lock covering fits into the 1st connector housing, the sealing surface of lock covering can secure waterproofness in contact with the seal projected part of the 1st connector housing. Moreover, in the simple water proof connector of this invention by the above-mentioned configuration, after holding a connection terminal in connector housing, while the duplex stop of the connection terminal is carried out by inserting in lock covering, the sealing surface of lock covering can secure waterproofness in contact with the seal projected part of connector housing.

[0009]

[Example] The 1st example of the simple water proof connector concerning this invention is explained to a detail with reference to drawing 1 thru/or drawing 3. The decomposition perspective view in which drawing 1 shows the configuration of the simple water proof connector of this invention, a sectional view [in / in drawing 2 / drawing 1], and drawing 3 are the sectional views showing the condition of having fitted in.

[0010] As shown in drawing 1, the simple water proof connector 1 of this example is the example applied to the joint connector, and if a configuration is divided roughly, it consists of female mold connector housing 2, male connector housing 3, and lock covering 4. The female mold connector housing 2 consists of terminal attaching part 2a holding the hood 6 which forms the housing insertion opening 9 which inserts the male connector mentioned later, and a bus bar 7, and the lock arm 5 for a stop is formed in the outside top face of a hood 6. Moreover, in order to secure waterproofness, seal projected part 6a is continued and formed in the outside top face and side face of the hood 6 front.

[0011] The female mold terminal 11 (refer to drawing 2) which the male connector housing 3 fixed at the edge of two or more electric wires 10 is inserted in the terminal hold room 8. Two or more of these electric wires 10 are ****(ed) downward, and the tape volume of them is carried out and they are bundled in one. Moreover, two or more lock beak 3b for stopping lock covering mentioned later is formed in the back end section of male connector housing 3 periphery.

[0012] The female mold terminal 11 held in the male connector housing 3 escapes from the lock covering 4, and duplex stop section 4c for stops is prepared corresponding to the terminal hold room 8. Moreover, 4d of sealing surfaces which contact lock section 4b corresponding to lock beak 3b of the male connector housing 3 and seal projected part 6a of the female mold connector housing 2 is continued and formed in an inside top face and an inside side face. Furthermore, stop projection 4a for stopping the lock arm 5 of the female mold connector housing 2 is prepared in the point on the top face of an outside.

[0013] Next, with reference to drawing 2 and drawing 3, waterproofness is explained at the time of fitting of the female mold connector housing 2 and the male connector housing 3. As shown in drawing 2, the lock covering 4 is inserted in the back end of the male connector housing 3 with which the female mold terminal 11 was held. That is, by [of the male connector housing 3] positioning and pushing in so that it may be respectively inserted in the terminal hold room 8, lock section 4b overcomes lock beak 3b of the male connector housing 3, and duplex stop section 4c is engaged. Thereby, the lock covering 4 is inserted in the male connector housing 3 in one.

[0014] And the male connector housing 3 in which the lock covering 4 was inserted as shown in drawing 3 is inserted along with the medial surface of a hood 6 from the insertion opening 9 of the female mold connector housing 2. Then, connection 7a of a bus bar 7 fits in terminal insertion hole 3a which carried out opening to the front end section of the male connector housing 3, and by pushing in further, claw part 5a at the tip of the lock arm 5 of the female mold connector housing 2 overcomes stop projection 4a prepared in the front end of the lock covering 4, and is stopped. Thereby, fitting connection of the female mold connector housing 2 and the male connector housing 3 is made, and the female mold terminal 11 held in the male connector housing 3 is connected possible [energization] through the bus bar 7 of the female mold connector housing 2. At this time, infiltration of the water from the upper part etc. is prevented because 4d of sealing surfaces on the top face of the inside of seal projected part 6a and the lock covering 4 established in the top face and side face ahead of an outside of a hood 6 contacts, and waterproofness is secured.

[0015] Next, the simple water proof connector 12 of the 2nd example of a configuration of differing from the example mentioned above is explained with reference to drawing 4. In addition, the same component as the 1st example omits explanation. As shown in drawing 4, the lock covering 17 is united with the female connector housing 13 by the hinge region 18 formed in hood 16 top face of the female connector housing 13. Moreover, the lock receptacle section 15 for engaging with the male connector housing 14 is formed in the outside inferior surface of tongue of the female connector housing 13, and the lock arm 19 is formed in the location corresponding to said lock receptacle section 15 of the male connector housing 14.

[0016] If the male connector housing 14 which held the female mold terminal 11 by the above-mentioned configuration is inserted along with hood 16 medial surface of the female connector housing 13, the connection of a bus bar 7 will fit in terminal insertion hole 14a, and the lock arm 19 of the male connector housing 14 will be stopped by the lock receptacle section 15 of the female connector housing 13 by pushing in further. Fitting of the male connector housing 14 is carried out to the female connector housing 13 in this condition, and the female mold terminal 11 held in the male connector housing 3 is connected possible [energization] through a bus bar 7. And by carrying out insertion engagement of the lock covering 17 finally connected by the hinge region 18 at front end opening of the female connector housing 13, infiltration of the water from the upper part etc. is prevented because seal projected part 16a prepared in the top face and side face ahead of an outside of a hood 16 and the sealing surface on the top face of the inside of the lock covering 17 contact, and waterproofness is secured.

[0017] Next, as shown in drawing 5, the simple water proof connector 20 as the 3rd example can secure waterproofness, where the lock covering 21 is inserted in the male connector housing 22. That is, seal projected part 22a is continuously prepared on the top face behind [outside] the male connector housing 22, and the side face, and stop slot 21a corresponding to said seal projected part 22a is prepared in the sealing surface on the top face of the inside of the lock covering 21. and after the female mold terminal 11 is held in the male connector housing 22, as duplex stop section 21b of the lock covering 21 fits in the each terminal hold room 24 which carried out opening to the male connector housing 22 back end, it is inserted in it. At this time, seal projected part 22a engages with stop slot 21a on a sealing surface by pushing in until the point of the lock covering 21 overcomes seal projected part 22a. Thereby, while the duplex stop of the female mold terminal 11 is carried out, infiltration of the water from the upper part etc. is prevented and, as for the male connector housing 22, waterproofness is secured. In addition, a fitting stop is carried out at female mold connector housing which corresponds by the lock arm 23 prepared in the outside top face of the male connector housing 22.

[0018] Next, the simple water proof connector 25 which combined the 1st example and 3rd example as the 4th example is explained with reference to drawing 6 R> 6. As shown in drawing 6, into the terminal hold room 28 of the female mold connector housing 26, the male terminal 27 which fixed at the edge of electric-wire 10a is inserted, and the lock covering 21 is inserted in back end opening of this female mold connector housing 26. The waterproofness of back end opening of the female mold connector housing 26 is already secured because seal projected part 22a engages with stop slot 21a as drawing 5 explained by insertion of this lock covering 21. Moreover, into the terminal hold room 28 of the male connector housing 3, the female mold terminal 11 which fixed at the edge of electric-wire 10b is inserted, and the lock covering 4 is inserted in back end opening of this male connector housing 3.

[0019] Therefore, attachment is fitted in along with hood 6 medial surface of the female mold connector housing 26 in which the male connector housing 3 which inserted in the lock covering 4 beforehand inserted the lock covering 21 beforehand. Thereby, the male connector housing 3 and the female mold connector housing 26 fit in, and flow connection of the female mold terminal 11 and the male terminal 27 is made. At this time, as drawing 3 explained, when 4d of sealing surfaces of the lock covering 4 contacts seal projected part 6a of a hood 6, infiltration of the

water from the upper part etc. is prevented and waterproofness is secured.
[0020]

[Effect of the Invention] As mentioned above, while preparing a seal projected part in the 1st top face and side face of a front periphery of connector housing according to the simple water proof connector poured on this invention as explained, when a sealing surface is prepared in the top face and side face of the inner circumference front end section of lock covering and the 1st connector housing and the 2nd connector housing fit in, a sealing surface contacts a seal projected part. [of a hood] Moreover, while preparing a seal projected part in the top face and side face of a back periphery of connector housing, when a sealing surface is prepared in the top face and side face of the inner circumference front end section of lock covering and lock covering is inserted in, a sealing surface contacts a seal projected part. Therefore, infiltration of the water for a connection terminal area etc. is prevented without using waterproofing packing and a rubber stopper, and waterproofness is secured. And while being able to do an attachment activity easily by using neither waterproofing packing nor a rubber stopper, reduction of cost can be aimed at by reduction of components mark.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the decomposition perspective view showing the configuration of the simple water proof connector which is the 1st example of this invention.

[Drawing 2] It is a sectional view in drawing 1.

[Drawing 3] It is the sectional view showing the fitting condition in drawing 1.

[Drawing 4] It is the sectional view showing the fitting condition of the 2nd example.

[Drawing 5] It is the sectional view showing the 3rd example.

[Drawing 6] It is the sectional view showing the fitting condition of the 4th example.

[Drawing 7] It is the perspective view showing the configuration of the conventional water proof connector.

[Description of Notations]

- 1, 12, 20, 25 Simple water proof connector
 - 2, 13, 26 Female mold connector housing (the 1st connector housing)
 - 3, 14, 22 Male connector housing (the 2nd connector housing)
 - 3a, 14a Terminal insertion hole
 - 3b Lock beak
 - 4, 17, 21 Lock covering
 - 4a Stop projection
 - 4b Lock section
 - 4c, 17a, 21b Duplex stop section
 - 4d, 17b Sealing surface
 - 5, 19, 23 Lock arm
 - 5a Claw part
 - 6 16 Hood
 - 6a, 16a, 22a Seal projected part
 - 7 Bus Bar
 - 8, 24, 28 Terminal hold room
 - 9 Housing Insertion Opening
 - 10 Connection Electric Wire
 - 11 Female Mold Terminal
 - 15 Lock Receiving Part
 - 18 Hinge Region
 - 21a Stop slot
 - 27 Male Terminal
-

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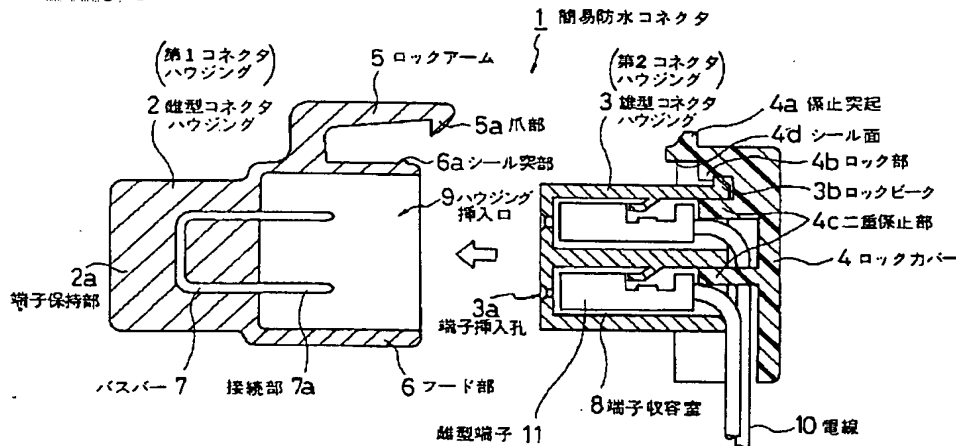
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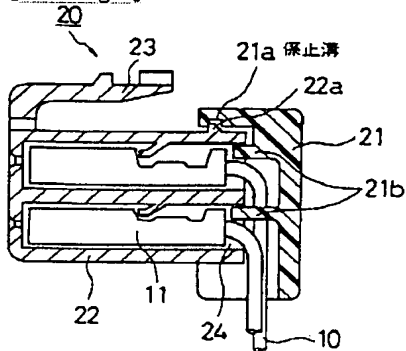
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DRAWINGS

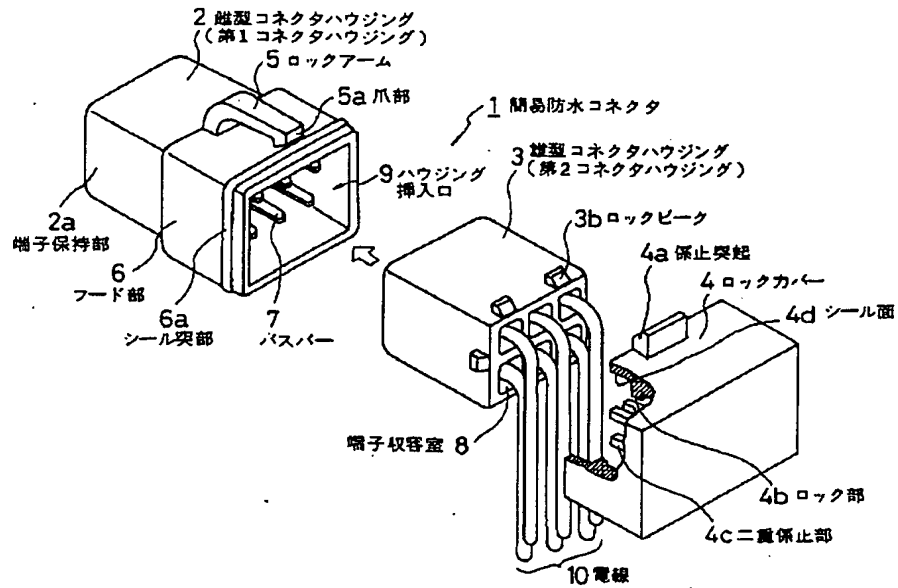
[Drawing 2]



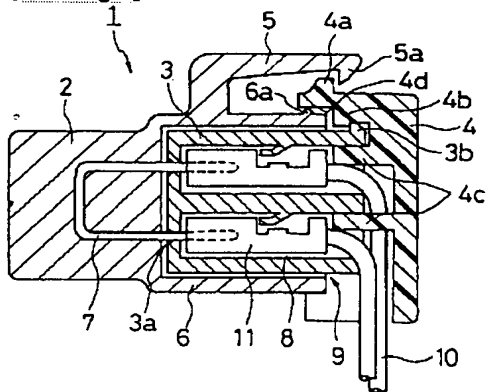
[Drawing 5]



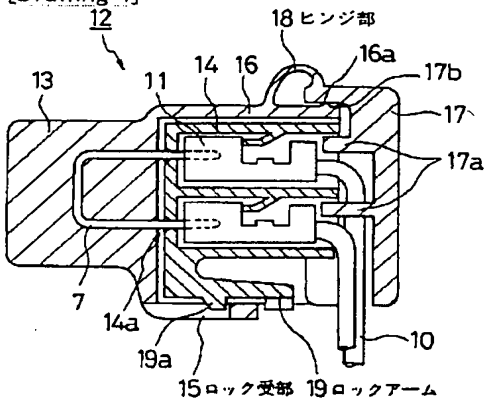
[Drawing 1]



[Drawing 3]



[Drawing 4]



[Drawing 6]

